



United States  
**CONSUMER PRODUCT SAFETY COMMISSION**  
Washington, D.C. 20207

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## VOTE SHEET

DATE: FEB 10 1998

TO : The Commission  
Sadye E. Dunn, Secretary

FROM : Jeffrey Bromme, General Counsel  
Stephen Lemberg, Assistant General Counsel  
Patricia M. Pollitzer, Attorney, OGC *pmp*

SUBJECT: Proposed PPPA Rule Requiring Child-Resistant Packaging for Topical Minoxidil

Attached is a staff briefing package recommending that the Commission issue a proposed rule requiring child-resistant packaging under the Poison Prevention Packaging Act for preparations containing more than 14 mg of minoxidil. Tab E of the package contains a draft ~~Federal Register~~ notice that reflects the staff's recommendation.

Please indicate your vote on the following options.

- I. Approve the ~~Federal Register~~ notice as drafted.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

- II. Approve the draft ~~Federal Register~~ notice with the following changes (please specify).

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\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

Page 1 of 2

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III. Do not approve the draft Federal Register notice.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

IV. Take other action (please specify).

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(Signature)

\_\_\_\_\_  
(Date)

Attachment

## BRIEFING PACKAGE

### PROPOSED RULE TO REQUIRE SPECIAL PACKAGING FOR TOPICAL MINOXIDIL



#### For Information Contact

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## Executive Summary

Topical minoxidil is a liquid medication that can be applied to the scalp to stimulate hair regrowth in men and women with a common form of genetic hair loss. The medication was granted over-the-counter (OTC) status and has been available to consumers without a prescription since 1996. While dermal application of minoxidil in the recommended quantities is considered safe, ingestion of small amounts is known to dilate blood vessels, increase heart rate, and lower blood pressure. If ingested by a child, minoxidil could cause adverse pharmacologic effects. Its toxicity potential combined with greater consumer access to the product as a result of its OTC status led the Commission staff to evaluate topical minoxidil for special packaging requirements under the Poison Prevention Packaging Act (PPPA).

Minoxidil tablets in combination with other drugs are prescribed to adults and children suffering severe hypertension as an effective means of reducing blood pressure. The pharmacologic effects following therapeutic ingestion of minoxidil tablets have been well studied. Minoxidil is easily absorbed into the bloodstream, whether ingested as a solution or in tablet form. The amount of minoxidil contained in the OTC topical solutions far exceeds the prescription doses used to lower blood pressure. Although not numerous, serious injuries have occurred as a result of profound and prolonged cardiovascular effects following overdose of minoxidil liquid and tablets.

All containers of topical minoxidil solution examined by the staff were secured with child-resistant (CR) and senior-friendly (SF) primary, continuous threaded (screw type) closures. One or more additional dropper or metered finger mechanical sprayer closures were provided in the packages for the purpose of applying the solution onto the scalp. Some dropper and all finger sprayer applicator closures were non-CR. The staff concludes that the data support the finding it is technically feasible, practicable, and appropriate to require CR/SF closures for all packages, given adequate time and resources. The cost of CR/SF primary and dropper applicator closures are competitive with non-CR packaging. The incremental cost of providing CR/SF finger pump sprayers can not be determined at this time since they are not commercially available, but is not expected to be large relative to the retail price of the product.

In order to protect children from serious personal injury following ingestion, the staff recommends that the Commission propose a special packaging standard for preparations containing more than 14 mg of minoxidil in a single package. The standard will apply to primary closures and applicators packaged with minoxidil products that are intended to replace the primary closure when used and stored in the home. The staff proposes the minimum six month effective date for primary and CR/SF dropper packaging and a one year effective date for CR/SF metered finger mechanical sprayer packaging.



United States  
CONSUMER PRODUCT SAFETY COMMISSION  
Washington, D.C. 20207

MEMORANDUM

DATE: FEB 10 1998

**To :** The Commission  
Sadye E. Dunn, Secretary

**Through :** Jeffrey Bromme, General Counsel *J. Bromme*  
**Through :** Pamela Gilbert, Executive Director *P. Gilbert*

**From :** Ronald L. Medford, <sup>RLM</sup> Assistant Executive Director for Hazard Identification and Reduction  
Val H. Schaeffer, Ph.D., Pharmacologist, Directorate for Epidemiology and Health Sciences *V. S.*

**Subject :** Special Packaging Standard for Topical Minoxidil

**I. Introduction**

Topical minoxidil is a liquid medication that can be applied to the scalp to stimulate hair regrowth in men and women with a common form of genetic hair loss (androgenetic alopecia). It has been available by prescription since 1988. The Food and Drug Administration (FDA) first approved the sale of topical minoxidil as an over-the-counter (OTC) product in February 1996. Minoxidil is also available, by prescription only, in tablet form to treat severe hypertension (abnormally high blood pressure). The potential for adverse pharmacologic effects if topical minoxidil is accidentally ingested by a child combined with greater consumer access to the product as a result of its OTC status led Commission staff to evaluate minoxidil as a candidate for special packaging requirements under the Poison Prevention Packaging Act (PPPA).

The PPPA authorizes the Commission to establish special packaging standards for household substances that may cause serious injury or illness to young children. Special packaging is packaging designed to be easily accessed and resecured by normal adults 70 years of age and less ("senior-friendly"), yet difficult to open by children under the age of 5 years ("child-resistant"). The PPPA regulations require special packaging for oral **prescription** drugs, including minoxidil tablets, unless the Commission grants an exemption. However, medications intended for dermal application, such as topical minoxidil solution, are not subject to special packaging requirements of the PPPA, unless the Commission specifically requires it.

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In order to support a special packaging standard for any substance under the PPPA, including topical minoxidil, the substance must present a threat of serious personal injury or illness to young children when ingested or otherwise handled. The potential injuries must be such that special packaging can protect against the hazard. TAB A provides a toxicity assessment of topical minoxidil. It reviews the necessary toxicity information to characterize the ingestion hazard and proposes a regulated level above which exists a reasonable risk of serious injury to young children.

The PPPA requires that special packaging be technically feasible, practicable, and appropriate. TAB B provides such an assessment for packaging currently used for topical minoxidil. It also proposes an **effective** date by which the products can be supplied in special packaging.

An assessment of the economic considerations with respect to a proposal to require special packaging for topical minoxidil is provided at TAB C. This discusses the market and product sales for topical minoxidil, characterizes the economic impact of the proposal, and provides a preliminary analysis of the economic effects on small businesses as required by the Regulatory Flexibility Act. Topical minoxidil is supplied with applicator closures that are intended to be secured onto the container in order to apply the product. The position of the Office of Compliance with regard to special packaging of applicator closures accompanying liquid medications is described at TAB D. A draft *Federal* Register Notice for a proposed rule requiring special packaging for minoxidil-containing products is provided at TAB E.

## **II. Product Information**

Topical minoxidil for hair regrowth first became available by prescription in 1988 prior to its approval as an OTC preparation. It is marketed primarily as a 2 percent solution in 60 percent alcohol, propylene glycol, and water. Use instructions direct that one milliliter (20 milligrams of minoxidil) be applied to the desired area of the scalp twice daily. Approximately four months of daily application is generally required before there is evidence of noticeable hair growth. The degree and onset of hair growth is variable among individuals. Continuous application is necessary to maintain the newly grown hair. The **predominant** package size is 60 milliliter (1200 milligrams of minoxidil) which lasts about 30 days if used as directed.

The staff is aware of ten manufacturers that have obtained FDA approval to market 2 percent minoxidil solution. Two of these ten are small pharmaceutical companies. The Commission staff knows of six other companies that are supplying this minoxidil formulation but do not have approval to manufacture the substance. These are likely repackagers or relabelers. There may be other marketers who now sell or plan to make this product available in the future. According to a trade journal, the OTC sales potential for hair

regrowth products is significant'. In its first year following the switch to OTC, retail sales of topical minoxidil were about \$200 million (roughly 8 million packages).

Topical minoxidil formulations are either packaged specifically for men or specifically for women. The respective formulations for men and women are identical but the packaging and instructions are slightly different. All topical minoxidil bottles examined by the Commission staff were secured with child-resistant (CR), senior friendly (SF) closures and all product packages contained one or more applicators intended to be secured on the container for product use. Some, but not all, applicator closures were found to be CR/SF (see section V. on Available Packaging for more details).

A more potent 5 percent minoxidil solution for men from one manufacturer was approved by the FDA as an OTC product on November 14, 1997. The package size (60 milliliter) is the same and it is supplied with the same applicators as its 2 percent counterpart. The recommended dosage is also one milliliter (50 milligrams of minoxidil) applied to the scalp twice daily. The total minoxidil content of the package is 3000 milligrams.

### **III. Toxicity**

There are two types of health effects information that support the finding that ingestion of topical minoxidil may cause serious injury to a young child. The first is pharmacologic data following therapeutic ingestion of minoxidil tablets in hypertensive patients which demonstrate cardiac and vascular effects at low doses. The second is human injury data resulting from minoxidil overdose. This toxicological evidence is described in greater detail at TAB A.

It has been shown that minoxidil, whether ingested as a solution or in tablet form, is rapidly and almost completely (>95 percent) absorbed by the gastrointestinal tract and becomes distributed systemically throughout the rest of the body. This contrasts with the poor absorption (<5 percent) of minoxidil solution across the skin when applied in recommended amounts to the undamaged scalp. Because of the poor skin absorption, insufficient levels of minoxidil reach the bloodstream to cause vascular and cardiac effects when applied topically. This large difference in absorption behavior explains why a topical minoxidil solution is considered safe when used as directed but can be harmful if ingested.

#### **A. *Pharmacologic Effects From Therapeutic Ingestion***

For more than 15 years, oral ingestion of minoxidil tablets has been a prescribed treatment for severe hypertension. Once in the bloodstream, minoxidil lowers blood pressure by relaxing the smooth muscle of the arteries. The body's nervous system automatically

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<sup>1</sup> *Pharmacy Times*, March, 1996

responds to this vasodilation by causing the heart to beat faster (tachycardia) and with more force (increased cardiac output) in order to compensate for the drop in blood pressure. Therefore, minoxidil is prescribed along with another drug (a  $\beta$ -adrenergic blocking agent) which eliminates the adaptive cardiac response. A diuretic is also prescribed with minoxidil to reduce fluid retention (edema) which can be another reflex response to the vasodilation. This combination drug therapy allows minoxidil to reduce blood pressure at low doses in hypertensive adults (typically 10 to 40 mg per day) and children (0.2 to 1 mg/kg) without causing stress to the heart or edema.

The pharmacologic response to minoxidil ingestion in the presence and absence of the P-blocking agent is somewhat different. Without the P-blocking agent, ingestion of the usual therapeutic doses of minoxidil causes sustained increases in heart rate and cardiac output but minimal effects on blood pressure, especially in normotensives<sup>2</sup>. However, as the ingested dose of minoxidil increases, the cardiac effects may no longer be able to compensate for the minoxidil-induced vasodilation resulting in a reduction in blood pressure. When blood pressure becomes abnormally low (hypotension), it can lead to lethargy and lightheadedness with the possibility of damage to the heart and other tissues with high oxygen demand, if left untreated. To avoid the possibility of serious adverse effects, the maximum recommended daily therapeutic dosage of minoxidil is 100 mg in adults. The equivalent maximum recommended minoxidil dose range for an average one to two year old is 10 to 20 mg. This is the amount of minoxidil contained in about 1 /7<sup>th</sup> of a teaspoon of the 2 percent topical preparations and about 1 /18<sup>th</sup> of a teaspoon of the newly approved 5 percent OTC solution.

### ***B. Injury Data Following Overdose Ingestions***

The potential for serious injury from ingestion of minoxidil in amounts that exceed therapeutic doses is supported by the available poisoning data. Information on adverse health effects from ingestions of minoxidil was retrieved from several sources. These include data from the American Association of Poison Control Centers (AAPCC), the FDA Spontaneous Reporting System (SRS), published reports in the medical literature, and reports from the injury surveillance databases maintained by the Commission.

One retrospective study evaluated AAPCC records of all minoxidil exposures (tablet and liquid) from 1985 through 1991. The study reported 285 incidents in which about half (51 percent) occurred in children under six years of age. Moderate or severe poisoning<sup>3</sup> occurred in 16 of the 285 incidents. 'The number of serious poisonings that occurred specifically in young children was not reported. The most frequently reported adverse effects were hypotension (69 percent), tachycardia (38 percent), and lethargy ( 31 percent) with 44 percent requiring medical treatment. Some of the serious poisonings may have involved co-

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<sup>2</sup> individuals with normal blood pressure

<sup>3</sup> systemic toxicities that were pronounced and prolonged (moderate) or life-threatening (severe) requiring attention in health care facility.

ingestion of other substances. There was one reported death of an adult caused by an ingestion of minoxidil with other vasodilators, and acetaminophen. The study did not distinguish between ingestions of minoxidil tablets and topical solution.

The SRS is a computerized database of adverse effects reported to the FDA after a drug goes on the market. Most of the reactions reported to be associated with topical minoxidil resulted from dermal application. However, an FDA report specifically cited five ingestion cases, three of which led to serious outcomes. One case was a suicide in which an adult male ingested the contents of five bottles (6 grams in 300 ml) of topical minoxidil and died. No other details were provided. A second case was an adult male who mistakenly ingested 15-20 ml (300-400 mg) of topical minoxidil and was hospitalized with severe hypotension, cardiac effects, and acute renal failure. The person was on medication at the time of the poisoning but no other details of his prior medical condition were cited. The third case was an ingestion of topical minoxidil by a 2-year-old child who was admitted to an intensive care unit in a lethargic state with a rapid pulse, but was discharged the same day. The amount of minoxidil actually ingested was never established.

Two other childhood ingestion cases of topical minoxidil resulting in hospital visits were reported in SRS. In both incidents, no adverse outcomes were recorded but the children were retained at the hospital for observation. While the children gained access to the medication in these cases, it was suspected by medical staff that no minoxidil was consumed.

Five case reports of injuries following minoxidil ingestion were found in the published literature. Two cases involved young children. In one instance, a 2-year-old ingested an unconfirmed number of minoxidil tablets. In the second instance, a 3-year-old swallowed an estimated 1 -2 milliliters of three percent minoxidil solution (30 - 60 milligrams). Both children were seen at hospitals experiencing moderate tachycardia but no other reported abnormalities. The three other reports were ingestions by adults of minoxidil tablets (one case) or 2 percent liquid (two cases). They involved consumption of several hundred milligrams of minoxidil (10-20 mg/kg) along with alcohol and, in one case, several other substances. The clinical courses were similar. A few hours after ingestion, each individual was admitted to a hospital, usually in a disoriented and unresponsive state. They became moderately to severely hypotensive with tachycardia and elevated cardiac output. Medical treatment was administered and the patient's cardiac and vascular signs eventually normalized over the next 36 to 72 hours. In each instance, it was concluded that minoxidil was primarily responsible for the observed effects, and that co-ingested substances, such as alcohol, were not consumed in amounts sufficient to cause the reported symptoms.

The Commission obtains annual AAPCC data on pediatric exposures to drugs and other household substances. Four ingestions of topical minoxidil liquid by children under five years of age were recorded in the AAPCC database for 1995. This increased to 43 reported cases in 1996. One case exhibited moderate effects<sup>3</sup>. Prior to 1995, topical minoxidil was not given a specific code within the database. A single childhood poisoning case associated with minoxidil was reported in the National Electronic Injury Surveillance

System (NEISS) database between 1988 and 1997. The amount of ingested minoxidil was not determined for the NEISS and AAPCC cases. There were no minoxidil-related injuries or deaths found in the CPSC Death Certificate files for the 1988 to 1997 time period.

#### **IV. Regulated Level**

In order to establish a special packaging standard under the PPPA, an ingested dose level must be determined below which children under 5 years of age are protected from the likelihood of serious injury or illness. Since a toxic dose limit for young children can not be precisely defined, the staff believes that the regulated level should be based on the maximum recommended therapeutic dose of minoxidil. Daily intake of quantities greater than 100 mg minoxidil are not recommended as an anti-hypertensive agent in adults because of the increasing potential for serious adverse effects (See TAB A). This corresponds to a weight-adjusted dose of 1.4 mg/kg for the average 70 kg adult and is equivalent to a 14 mg dose level for a 10 kg child<sup>4</sup>. The CPSC staff, therefore, recommend that preparations containing more than 14 mg of minoxidil be packaged in accordance with the special packaging provisions of the PPPA.

#### **V. Available Packaging**

The Commission staff obtained thirteen topical minoxidil products in order to evaluate the type of packaging currently available to consumers. Nine products were marketed for men and four products were marketed for women. Twelve products were standard formulations of 2 percent minoxidil solution. The remaining product was the new 5 percent minoxidil. All were packaged in a 60 milliliter container secured with a CR/SF continuous threaded (screw) type primary closure. In addition to the primary closure, the products contained one or more applicator closures within the package. These were designed to be secured and maintained on the minoxidil container for the purpose of applying the solution to the scalp.

Topical minoxidil treatment is most effective for men who have a small localized area of thinning hair at the very top/back (vertex) of the scalp. A continuous threaded recloseable dropper was the most common applicator included with the men's products. All nine topical minoxidil packages for men contained dropper applicators. Product instructions state that the dropper is useful for a broad range of hair styles or hair loss because it allows for easy application through the hair directly onto the scalp. Staff from the Directorate for Epidemiology and Health Sciences (EH) confirmed that six men's products were packaged with SF/CR dropper applicators. The other three products contained non-CR dropper applicators with instructions to resecure the child-resistant primary closure onto the container after each application, if small children are present.

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<sup>4</sup> A 10 kg body weight has been used as a reference weight for a young child in past toxicity assessments related to the PPPA. It is the average body weight of a child approximately one and a half years of age.

Four topical minoxidil packages for men contained a metered finger mechanical sprayer applicator closure as well as a CR/SF dropper applicator. Product instructions state that the finger sprayer may be more useful for broader areas of hair loss. The metered finger sprayer dispenses the minoxidil solution as a mist allowing wider coverage per activation. Six full activations of the finger sprayer are required to deliver the correct dose of minoxidil. EH staff confirmed that all metered finger mechanical sprayer applicators packaged with the topical minoxidil products were non-CR.

Women subject to the common form of genetic hair loss exhibit a different baldness pattern than men. Hair loss is expressed as thinning hair over a broad area on the top of the scalp rather than localized at the vertex. The four topical minoxidil packages for women all contained the metered finger mechanical sprayer applicator to accommodate this broader area of hair loss. Three of the four packages included an extender attachment designed to fit onto the metered finger pump mechanism. This allows the minoxidil mist to be delivered through the hair closer to the scalp. Like the finger sprayer applicators, the extended sprayers were non-CR with instructions to resecure the child-resistant primary closure onto the container after each application, if small children are present. One woman's product included a CR/SF dropper applicator as well as the non-CR finger sprayer applicator. Another package contained a CR/SF dropper with the non-CR finger sprayer and the extender attachment.

## **VI. Technical Feasibility, Practicability, and Appropriateness**

The EH staff assessed the available packaging for topical minoxidil and concludes that data support the finding that special packaging is technically feasible (producible), practicable (lends itself to mass production), and appropriate (compatible with the contents of the package). The findings are discussed in more detail at TAB B. CR/SF continuous threaded primary closures are already widely available and in use for topical minoxidil and many other products. CR/SF dropper applicators to accommodate topical minoxidil containers are also in use.

Unlike CR/SF continuous threaded packaging and dropper applicators, there are no commercially available CR/SF metered finger mechanical sprayers or extender attachments for topical minoxidil products. However, a prototype CR metered finger mechanical sprayer was developed but has not been tested with the senior test protocol. The staff believe such packaging is technically feasible, practicable, and appropriate.

## **VII. Effective Date**

The staff believe that a six month effective date is sufficient time for manufacturers to provide continuous threaded SF/CR packaging and dropper applicators for topical minoxidil products. The primary product containers are already CR/SF. In addition, CR/SF droppers are commercially available and used with most of the minoxidil products examined by the staff that contained droppers.

More than six months will be necessary to convert to a CR/SF metered finger mechanical sprayer. A major packaging manufacturer has indicated that a design could be modified and tested in approximately twelve months. If additional time is necessary to produce commercial quantities, companies could request a temporary stay of enforcement.

## **VIII. Economic and Environmental Considerations**

The Directorate for Economic Analysis (EC) preliminarily concludes that a special packaging requirement for CR/SF primary and applicator closures would not be expected to have a significant economic impact on a substantial number of small firms that market topical minoxidil. There are currently very few small businesses (only two known small manufacturers) that would be impacted by the special packaging requirement. These firms can supply CR/SF continuous threaded closures and droppers at costs competitive with non-CR closures. The incremental costs of CR/SF metered finger mechanical sprayers can not be determined since these applicator closures are not yet commercially available. However, non-CR finger sprayers are available at an estimated cost of 13 to 15 cents; the additional cost of a CR/SF metered finger sprayer is not expected to be large compared with the retail price of the topical minoxidil product (average price of about \$25). Firms also have the option of supplying only a CR/SF dropper applicator. Further information regarding the potential impact on small businesses will be sought in the Notice of Proposed Rulemaking if the Commission decides to propose a rule. A special packaging requirement will have no significant effects on the environment since the manufacture, use, and disposal of CR/SF closures will present the same environmental effects as non-CR closures. A more detailed economic analysis is provided at TAB C.

## **IX. Special Packaging Requirement for Applicator Closures**

The staff position with regard to special packaging requirements for applicator closures that accompany liquid medications is discussed in a memorandum from the Office of Compliance (EXC) provided at TAB D. Early in the Commission's enforcement of PPPA regulations, EXC and the Office of the General Counsel agreed that if a package containing a liquid medication is required to be CR, any dropper closure supplied with the package that could be secured onto the product container for the purpose of using or storing the medication must also be CR. The staff believes that the same interpretation applies to the metered finger mechanical sprayer applicator closures as well. This does not mean that every applicator supplied with a substance requiring special packaging must be CR/SF. It is permissible for an applicator, such as a dropper without a closure ring, to be packaged with a medication if the applicator can not be secured to the product container. Further discussion of the statutory implications of a special packaging requirement for applicator closures are provided in the draft Notice of Proposed Rulemaking at TAB E.

## **X. Options**

1. The Commission may propose a rule requiring special packaging for products containing more than 14 mg of minoxidil in a single package if the Commission preliminarily finds that:
  - i.) special packaging is required to protect young children from serious personal injury or illness from handling, using or ingesting the product; and
  - ii.) special packaging is technically feasible, practicable, and appropriate

The proposed rule would apply not only to the primary closure but applicators supplied with the package that are intended to be secured to the minoxidil container.

2. The Commission may decline to propose a special packaging rule for minoxidil if it is unable to make these findings.

## **XI. Conclusion & Recommendation**

Minoxidil is a potent vasodilator capable of causing profound and serious effects on cardiac and vascular function, if ingested in sufficient quantities. Packages of topical solution for hair regrowth can be purchased by consumers OTC without a prescription. These products do not now require special packaging. Serious injuries from minoxidil ingestions in adults have been well documented. The clinical symptoms are consistent with the exaggerated pharmacologic effects that would be predicted to occur in a child ingesting a similar dose of minoxidil. It is reasonable to expect an increase in childhood ingestions with greater consumer access that accompanies OTC status and further entry into the market of products without CR applicators.

The available topical minoxidil solutions contain at least 1200 mg of minoxidil which far exceeds an amount expected to cause serious injury to a young child. EH staff concludes that most healthy children under 5 years of age will be reasonably protected from serious personal injury and illness following ingestion of minoxidil in quantities of 14 mg or less. This represents very small quantities ( $1/18^{\text{th}}$  to  $1/7^{\text{th}}$  of a teaspoon) of the current topical minoxidil formulations. The staff believes the proposed level is protective against sustained tachycardia and significant vascular hypotension that can occur following ingestion of larger quantities of minoxidil. Consumption of less than the regulated amount can also lead to more mild increases in heart rate. While this may be an unwanted outcome, the staff does not consider this pharmacologic response to constitute serious injury.

All topical minoxidil packages examined by the Commission staff contained a 60 milliliter container secured with a CR/SF primary closure and one or more separate closures to be used to apply the product to the scalp. Some dropper and all metered finger mechanical sprayer applicator closures supplied with the product packages were non-CR.

Since CR/SF primary and dropper applicator closures are currently available, EH staff concludes that data support a finding that it is technically feasible, practicable and appropriate to require continuous threaded CR/SF packaging for topical minoxidil. EC staff concludes that firms will be able to obtain CR/SF primary packages at prices competitive with non-CR packaging; substitution of a CR dropper may only cost slightly more (5 cents per package).

While CR/SF metered finger sprayers are not presently available for topical minoxidil containers, EH staff believes a CR/SF design could be developed and tested in approximately one year. On this basis, they conclude that data support the finding that CR/SF metered finger sprayer packaging is technically feasible, practicable and appropriate. The cost of providing a CR/SF version of this applicator closure is not known at this time, but EC staff does not expect it to be large relative to the average retail price of the product.

In order to prevent the possibility of childhood poisonings, the staff recommends that the Commission propose a special packaging standard for preparations containing more than 14 mg of minoxidil in a single package. The standard will apply to primary closures and applicators packaged with minoxidil products that are intended to replace the primary closure when used and stored in the home. This special packaging requirement will ensure that current and future suppliers will provide available CR/SF packaging with their products. The staff proposes the minimum six month effective date for primary and CR/SF dropper packaging since these types of packaging are already being used with topical minoxidil preparations. A one year effective date for CR/SF metered finger mechanical sprayers is being proposed to allow for their design and testing. If additional time is necessary to produce commercial quantities, companies can request a temporary stay of enforcement. A draft proposed rule is provided at TAB E.